QC ABSTRACT

Nameof Work:De-silting and Re-setting of drain and Re asphalting to 5th B cross and 17th cross and other cross roads at MEI Layout in ward no 14 Bagalagunte , BBMP, Bangalore.

SI. No.	Item	Quantity As Per BOQ	Required No's of testes as per Frequency	Actual No's of testes as per Frequency	Testes Results
1	Slab (100mm)	329.40 Sqm	1	1	Pass
2	WMM	155.25Cum	-	-	-
		Gradation	2	2	Pass
		AIV	1	1	Pass
		Shape Test	1	1	Pass
		Atterberg Limits	2	2	Pass
3	DBM	64.80Cum	-	-	-
		Quality of Binder	1	1	Pass
		AIV	1	1	Pass
		Shape Test	1	1	Pass
		Gradation	1	1	Pass
		Specific Gravity	1	1	Pass
		Stability of Mix	2	2	Pass
		Bitumen content	2	2	Pass
4	BC	173.04. Cum	-	-	-
		Quality of Binder	1	1	Pass
		AIV	1	1	Pass
		Shape Test	1	1	Pass
		Gradation	1	1	Pass
		Specific Gravity	1	1	Pass
		Stability of Mix	4	4	Pass
		Bitumen content	4	4	Pass

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Job No.: CACE/BBMP/NK/W.No.14/2022-23

Date: 01.12.2022

TEST REPORT

CLIENT	:	**Assistant Executive Engineer**, Dasarahalli Sub Division, BBMP, Bangalore.
AGENCY	:	**Sri. Nagaraj K, Contractor, Bangalore.**
NAME OF THE WORK	:	Modified Estimate of De-silting and Re-setting of drain and Re asphalting to 5th B cross and 17th cross and other cross roads at MEI Layout in ward no 14 Bagalagunte , BBMP, Bangalore.
SAMPLE ID	:	Cement (Birla OPC 53 Grade)
DATE OF MANUFACTURE		October - 2022
DATE OF TESTING		29.11.2022 to 01.12.2022
SAMPLES SUPPLIED BY	:	AGENCY

The results of the tests conducted on the cement sample are as follows:

Sl.No	Descriptions	Test Method as per IS	Test Result	Requirements as per IS: 269-2015
1	a) Initial Setting Time	IS-4031 (Part -5)	145 Minutes	Not Less than 30 Minutes
	b) Final Setting Time	IS-4031 (Part -5)	335 Minutes	Not More than 600 Minutes
2	Soundness	IS-4031 (Part 3) by the Le-Chatelier method	2 mm	Not more than 10 mm
3	Standard Consistency	IS-4031 (Part -4)	29.00 %	-

Note:

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Date : 01.12.2022

TEST REPORT ON FINE AGGREGATES (SAND)

Client : **Assistant Executive Engineer, Dasarahalli Sub Division, BBMP, Bangalore.**

Agency : **Sri. Nagaraj K, Contractor, Bangalore.**

Name of Work : Modified Estimate of De-silting and Re-setting of drain and Re asphalting to 5th B cross and 17th cross and other cross roads at MEI Layout in ward no 14 Bagalagunte , BBMP, Bangalore.

Date of Testing : 01.12.2022

IS Code : IS 383:2016

: IS 1542 (1992)

Material : Sand

Total Wt. of Aggregates in gms **1000**

Is Sieve Size in mm	Weight Retained (gm)	Retained Weight in %	Cumulative Retained Weight in %	Cumulative Weight Passing in %	Spec.Limits For Zone-II
10	0	0	0	100	100
4.75	98	9.80	9.80	90.2	90-100
2.36	119	11.90	21.70	78.3	75-100
1.18	175	17.50	39.20	60.8	55-90
600 Micron	163	16.30	55.50	44.5	35-59
300 Micron	255	25.50	81.00	19.0	8-30
150 Micron	141	14.10	95.10	4.9	0-10

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Date : 01.12.2022

TEST REPORT ON COARSE AGGREGATES

Client : **Assistant Executive Engineer, Dasarahalli Sub Division, BBMP, Bangalore.**

Agency : **Sri. Nagaraj K, Contractor, Bangalore.**

Name of Work : Modified Estimate of De-silting and Re-setting of drain and Re asphalting to 5th B cross and 17th cross and other cross roads at MEI Layout in ward no 14 Bagalagunte , BBMP, Bangalore.

Date of Testing : 01.12.2022

IS Code : IS 383:2016

: IS 2386 (Part 1):1963(RA 2011)

Material : 20mm Aggregates

Total Wt. of Aggregates in gms= **5000**

Is Sieve Size in mm	Weight Retained (gm)	Retained Weight in %	Cumulative Retained Weight in %	Cumulative Weight Passing in %	Spec.Limits
40	0	0	0	100	100
20	179	3.6	3.6	96.4	95-100
10	2439	48.8	52.4	47.6	25-55
4.75	1942	38.8	91.2	8.8	0-10

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Date : 01.12.2022

TEST REPORT ON COARSE AGGREGATES

Client : **Assistant Executive Engineer, Dasarahalli Sub Division, BBMP, Bangalore.**

Agency : **Sri. Nagaraj K, Contractor, Bangalore.**

Name of Work : Modified Estimate of De-silting and Re-setting of drain and Re asphalting to 5th B cross and 17th cross and other cross roads at MEI Layout in ward no 14 Bagalagunte , BBMP, Bangalore.

Date of Testing : 01.12.2022

IS Code : IS 383:2016

: IS 2386 (Part 1):1963(RA 2011)

Material : 40mm Aggregates

Total Wt. of Aggregates in gms **15000**

Is Sieve Size in mm	Weight Retained (gm)	Retained Weight in %	Cumulative Retained Weight in %	Cumulative Weight Passing in %	Spec.Limits
80	0	0	0	100	100
40	195	1.30	1.30	98.70	95-100
20	8263	55.09	56.39	43.61	30-70
10	3256	21.71	78.09	21.91	10-35
4.75	2821	18.81	96.90	3.10	0-5

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Date 01.12.2022

TEST REPORT ON FINE AGGREGATES (SAND)
IS 2116-1980

Client **Assistant Executive Engineer, Dasarahalli Sub Division, BBMP, Bangalore.**

Agency **Sri. Nagaraj K, Contractor, Bangalore.**

Name of Work Modified Estimate of De-silting and Re-setting of drain and Re asphalting to 5th B cross and 17th cross and other cross roads at MEI Layout in ward no 14 Bagalagunte , BBMP, Bangalore.

Date of Testing 01.12.2022

Material : Masonry Sand

Total wt. of aggregates in gms = **1000**

Is Sieve Size in mm	Weight Retained (gm)	Retained Weight in %	Cumulative Retained Weight in %	Cumulative Weight Passing in %	Spec.Limits as per IS 2116-1980
4.75	0	0.00	0.00	100.0	100
2.36	18	1.80	1.80	98.2	90-100
1.18	37	3.70	5.50	94.5	70-100
600 Micron	88	8.80	14.30	85.7	40-100
300 Micron	259	25.90	40.20	59.8	5-70
150 Micron	485	48.50	88.70	11.3	0-15

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Job No.: CACE/BBMP/NK/W.No.14/2022-23

Date: 05.12.2022

PRECAST SLAB 100 mm Thick(CORE) TEST REPORT

Client	:	**Assistant Executive Engineer, Dasarahalli Sub Division, BBMP, Bangalore.**
Contractor	:	**Sri. Nagaraj K, Contractor, Bangalore.**
Name of Work	:	Modified Estimate of De-silting and Re-setting of drain and Re asphalting to 5th B cross and 17th cross and other cross roads at MEI Layout in ward no 14 Bagalagunte , BBMP, Bangalore.
No.of Sample Tested	:	03
Date of Testing	:	05.12.2022
Techinical Reference	:	IS:516-1959 (Reaffirmed 1999), SP-24:1983.
Grade of Concrete	:	M_{20}

Sl. No.	Dia of Core D (mm)	Height of Core H (mm)	Core Wt (Kg)	Density of Core (kg / m^3)	H / D	Correction factor (Based on H/D)	Failure Load (kN)	Core Strength (N/mm^2)	Correction Factor for the Dia. (Strength of the Core x 1.08)	Corrected Cylinder Compressive Strength (N/mm^2)	Equivalent Cube Compressive Strength (N/mm^2)
1	50.00	79.00	0.379	2443.33	1.58	0.955	31.90	16.25	17.55	16.75	20.94
2	50.00	80.00	0.385	2450.99	1.60	0.957	32.50	16.55	17.88	17.10	21.38
3	50.00	81.00	0.399	2508.75	1.62	0.959	32.20	16.40	17.71	16.98	21.23

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Job No.: CACE/BBMP/NK/W.No.14/2022-23

Date : 08.12.2022

ATTERBERG LIMITS TEST FOR WMM

Client Assistant Executive Engineer, Dasarahalli Sub Division, BBMP, Bangalore.

Agency Sri. Nagaraj K, Contractor, Bangalore.

Name of Work Modified Estimate of De-silting and Re-setting of drain and Re asphalting to 5th B cross and 17th cross and other cross roads at MEI Layout in ward no 14 Bagalagunte , BBMP, Bangalore.

IS Code: : IS 2720(Part 5):1985

Date of Testing : 06.12.2022 to 08.12.2022

Material Type : Wet Mix Macadam

Sl. No.	Particulars	Test Results	Requirement as per MORTH 5th edition Cl.406.2.1.2
1	Liquid Limit	19.50	-
2	Plasticity Index, %	Non Plastic	6.0% Maximum.

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Job No.: CACE/BBMP/NK/W.No.14/2022-23 Date : 08.12.2022

ATTERBERG LIMITS TEST FOR WMM

Client **Assistant Executive Engineer, Dasarahalli Sub Division, BBMP, Bangalore.**

Agency **Sri. Nagaraj K, Contractor, Bangalore.**

Name of Work Modified Estimate of De-silting and Re-setting of drain and Re asphalting to 5th B cross and 17th cross and other cross roads at MEI Layout in ward no 14 Bagalagunte , BBMP, Bangalore.

IS Code: : IS 2720(Part 5):1985

Date of Testing : 06.12.2022 to 08.12.2022

Material Type : Wet Mix Macadam

Sl. No.	Particulars	Test Results	Requirement as per MORTH 5th edition Cl.406.2.1.2
1	Liquid Limit	20.50	-
2	Plasticity Index, %	Non Plastic	6.0% Maximum.

Note:

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Aggregate Impact Value

Client	**Assistant Executive Engineer, Dasarahalli Sub Division, BBMP, Bangalore.**
Agency	**Sri. Nagaraj K, Contractor, Bangalore.**
Name of the Work	Modified Estimate of De-silting and Re-setting of drain and Re asphalting to 5th B cross and 17th cross and other cross roads at MEI Layout in ward no 14 Bagalagunte , BBMP, Bangalore.
IS Code	IS 2386 (Part 4):1963(RA 2011)
Type of Mix	Wet Mix macadam
Date of Testing	08.12.2022

Sl No.	Details	Test No.		Average
		1	2	
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	385	382.5	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	85	86	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	300	296.5	
4	Aggregate Impact value = percent fines 100* (W_2/W_1)%	22.08	22.48	22.28

Comments:

→ Maximum allowable Aggregate Impact value for Wet mix Macadam is 30%(As per MORTH Specication table 400.12)

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Job No.: CACE/BBMP/NK/W.No.14/2022-23 Date : 08.12.2022

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client	**Assistant Executive Engineer, Dasarahalli Sub Division, BBMP, Bangalore.**
Agency	**Sri. Nagaraj K, Contractor, Bangalore.**
Name of Work	Modified Estimate of De-silting and Re-setting of drain and Re asphalting to 5th B cross and 17th cross and other cross roads at MEI Layout in ward no 14 Bagalagunte , BBMP, Bangalore.
BIS code:	IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	Wet Mix Macadam
Date of Testing	08.12.2022

Sl no	Test	1	2	Requirements as per MORTH 5th edition table no 400.12
1	Flakiness Index %	13.20	12.90	Combined Flakiness & Elongation index Max 35%
2	Elongation Index %	13.50	13.30	
	Combined Flakiness & Elongation index	26.70	26.20	

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GRADATION FOR WMM

Client **Assistant Executive Engineer, Dasarahalli Sub Division, BBMP, Bangalore.**

Agency **Sri. Nagaraj K, Contractor, Bangalore.**

Name of Work Modified Estimate of De-silting and Re-setting of drain and Re asphalting to 5th B cross and 17th cross and other cross roads at MEI Layout in ward no 14 Bagalagunte , BBMP, Bangalore.

IS Code: : IS 2386 (Part 1):1963(RA 2011)

Date of Testing :08.12.2022

Material Type : Wet Mix Macadam

Oven Dry.Wt, gran 10000

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Requirement as per MORTH 5th edition table no 400.13
53	0	0	0	100	100
45	191	191	1.9	98.1	95-100
22.4	2522	2713	27.1	72.9	60-80
11.2	2163	4876	48.8	51.2	40-60
4.75	1843	6719	67.2	32.8	25-40
2.36	1175	7894	78.9	21.1	15-30
0.600	622	8516	85.2	14.8	8-22
0.075	1234	9750	97.5	2.5	0-5

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Client **Assistant Executive Engineer, Dasarahalli Sub Division, BBMP, Bangalore.**

Agency **Sri. Nagaraj K, Contractor, Bangalore.**

Name of Work Modified Estimate of De-silting and Re-setting of drain and Re asphalting to 5th B cross and 17th cross and other cross roads at MEI Layout in ward no 14 Bagalagunte , BBMP, Bangalore.

IS Code: : IS 2386 (Part 1):1963(RA 2011)

Date of Testing :08.12.2022

Material Type : Wet Mix Macadam

Oven Dry.Wt, gran 10000

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Requirement as per MORTH 5th edition table no 400.13
53	0	0	0	100	100
45	199	199	2.0	98.0	95-100
22.4	2539	2738	27.4	72.6	60-80
11.2	2169	4907	49.1	50.9	40-60
4.75	1839	6746	67.5	32.5	25-40
2.36	1179	7925	79.3	20.8	15-30
0.600	629	8554	85.5	14.5	8-22
0.075	1232	9786	97.9	2.1	0-5

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For CIVIL AIM CONSULTANTS & ENGINEERS

Authorised Signatory

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JobNo: CACE/BBMP/NK/W.No.14/2022-23 Date : 17.01.2023

TEST RESULTS OF AGGREGATE IMPACT VALUE

Client : Assistant Executive Engineer, Dasarahalli Sub Division, BBMP, Bangalore.

Agency : Sri. Nagaraj K, Contractor, Bangalore.

Name of work : Modified Estimate of De-silting and Re-setting of drain and Re asphalting to 5th B cross and 17th cross and other cross roads at MEI Layout in ward no 14 Bagalagunte , BBMP, Bangalore.

Source / Location : Hot Mix Plant, Bangalore

BIS Code : IS 2386 Part (4):1963

Type of Mix : Dense Graded Bituminous Macadam

Date of test : 17.01.2023

Sl No.	Details	Trial No.		Average
		1	2	
1	Total weight of aggregate sample filling the cylindrical measure = W1 g	383	385	
2	Weight of agregate passing 2.36 mm sieve after the test = W2 g	88	90	
3	Weight of aggregate retained 2.36 mm sieve after the test = W3 g	295	295	
5	Aggregate Impact value = percent fines 100* (W2/W1) percent	22.98	23.38	**23.18**

Comments:

→ Maximum allowable Aggregate Impact value for Dense Graded Bituminous Macadam is 27% (Table 500-8 of MORTH specification)

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Job No.: CACE/BBMP/NK/W.No.14/2022-23

Date: 17.01.2023

Aggregate Gradation Test

Client	: Assistant Executive Engineer, Dasarahalli Sub Division, BBMP, Bangalore.
Agency	: Sri. Nagaraj K, Contractor, Bangalore.
Name of the Work	: Modified Estimate of De-silting and Re-setting of drain and Re asphalting to 5th B cross and 17th cross and other cross roads at MEI Layout in ward no 14 Bagalagunte , BBMP, Bangalore.
BIS Code	IS 2386(Part 1):1963(RA 2011)
Sample I / D	Hot mix Plant, Bangalore.
Type of Mix	Dense Graded Bituminous Macadam
Date of Testing	17.01.2023

Total Weight of Sample: **10000** gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Requirement as per MORTH table 500.10	Remarks
37.50	0	0.0	0	100	100	Gradation satisfies Grade-II MORTH specification
26.50	721	7.2	7.21	92.79	90 - 100	
19.00	1254	12.5	19.75	80.25	71 - 95	
13.20	1380	13.8	33.55	66.45	56 - 80	
4.75	2501	25.0	58.56	41.44	38 - 54	
2.36	1075	10.8	69.31	30.69	28 - 42	
0.300	1315	13.2	82.46	17.54	7 - 21	
0.075	1175	11.8	94.21	5.79	2 - 8	

Total Weight of Sample: **10000** gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Requirement as per MORTH table 500.10	Remarks
37.5	0	0.0	0	100	100	Gradation satisfies Grade-II MORTH specification
26.5	700	7.0	7.00	93.00	90 - 100	
19	1412	14.1	21.12	78.88	71 - 95	
13.2	1139	11.4	32.51	67.49	56 - 80	
4.75	2416	24.2	56.67	43.33	38 - 54	
2.360	1159	11.6	68.26	31.74	28 - 42	
0.300	1312	13.1	81.38	18.62	7 - 21	
0.075	1175	11.8	93.13	6.87	2 - 8	

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JobNo: CACE/BBMP/NK/W.No.14/2022-23 Date : 17.01.2023

TEST RESULTS OF AGGREGATE SHAPE TEST
(Flakiness & Elongation)

Client : Assistant Executive Engineer, Dasarahalli Sub Division, BBMP, Bangalore.

Agency : Sri. Nagaraj K, Contractor, Bangalore.

Name of work : Modified Estimate of De-silting and Re-setting of drain and Re asphalting to 5th B cross and 17th cross and other cross roads at MEI Layout in ward no 14 Bagalagunte , BBMP, Bangalore.

BIS Code : IS 2386 Part (1):1963

Date of Test : 17.01.2023

Type of Mix : Dense Graded Bituminous Macadam

Sl.No.	Flakiness Index Value(%)	Elongation Index Value(%)	Total(Combined Flakiness and Elongation)(%)	Requirements
1	12.80	13.50	26.30	Maximum allowable Combined Flakiness and Elongation Indices for Dense Graded Bituminous Macadam is 35% as per Table 500.8 MORTH Specification.
2	12.50	13.10	25.60	

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Job No: CACE/BBMP/NK/W.No.14/2022-23 Date: **20.01.2023**

TEST REPORT ON PAVING BITUMEN

Client	**Assistant Executive Engineer**, Dasarahalli Sub Division, BBMP, Bangalore.
Agency	**Sri. Nagaraj K, Contractor, Bangalore.**
Name of work	Modified Estimate of De-silting and Re-setting of drain and Re asphalting to 5th B cross and 17th cross and other cross roads at MEI Layout in ward no 14 Bagalagunte , BBMP, Bangalore.
BIS Code	IS 73:2013,IS 1203:1978, IS 1208:1978, IS 1205:1978, IS1448(P-69):1969
Date of Testing	**20.01.2023**
Type of Mix	**Dense Graded Bituminous Macadam , VG 30**
Source of Location	**Hot Mix Plant**

The results of the tests conducted on the bitumen sample using for Dense Graded Bituminous Macadam

Sl.No	Description	Test Result	Requirement as per IS:73:2013
1	Penetration at 25 0C, 100gms, 5sec, 1/10 mm	55	Min 45
2	Softening point, 0C	49	Min 47
3	Ductility at 250C, cm	>100	Min40
4	Flash Point, 0C	275	Min 220

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Job No.: CACE/BBMP/GMD/W.No.15/2022-23 Date: 19.01.2023

Specific Gravity And Water Absorption Test

Client	: Assistant Executive Engineer, Dasarahalli Sub Division, BBMP, Bangalore.
Agency	: Sri. Nagaraj K, Contractor, Bangalore.
Name of the Work	: Modified Estimate of De-silting and Re-setting of drain and Re asphalting to 5th B cross and 17th cross and other cross roads at MEI Layout in ward no 14 Bagalagunte , BBMP, Bangalore.
BIS Code	IS 2386(Part 3):1963
Type of Mix	Dense Graded Bituminous Macadam
Date of Testing	17.01.2023 to 19.01.2023

Sl. No.	Details	Notation	Test Number			Mean Value
			Test 1	Test 2	Test 3	
1	Weight of aggregate suspended in water with the basket	W_1 g	2024	2021	2022	
2	Weight of basket suspended in water	W_2 g	755	756	758	
3	Weight of saturated aggregate in water	$(W_1 - W_2) = W_s$ g	1269	1265	1264	
4	Weight of saturated surface dry aggregate in air	W_3 g	2017	2016	2015	
5	Weight of water equal to the volume of the aggregate	$(W_3 - W_S)$ g	748	751	751	
6	Weight of oven dried aggregate	W_4 g	2007	2007	2005	
7	Specific Gravity	$W_4/(W_3-W_S)$	2.683	2.672	2.670	2.675
8	Apparent Specific gravity	$W_4/(W_4-W_S)$	2.720	2.705	2.706	2.710
9	Water Absorption	$((W_3-W_4)*100)/W_4$	0.50%	0.45%	0.50%	0.48%

Comments:

→ Maximum allowable Aggregate Water absorption value for Dense Graded Bituminous Macadam is 2.0%(As per MORTH table 500.8)

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Job No.: CACE/BBMP/NK/W.No.14/2022-23 Date: 21.01.2023

TEST REPORT ON STABILITY OF MIX

Client	:	**Assistant Executive Engineer,** Dasarahalli Sub Division, BBMP, Bangalore.
Agency	:	**Sri. Nagaraj K, Contractor, Bangalore.**
Name of the Work	:	Modified Estimate of De-silting and Re-setting of drain and Re asphalting to 5th B cross and 17th cross and other cross roads at MEI Layout in ward no 14 Bagalagunte , BBMP, Bangalore.
Type of Mix	:	Dense Graded Bituminous Macadam
Date of Testing	:	21.01.2023

The results of the tests conducted on the Dense Graded Bituminous Macadam mix sample are as follows:

Sl. No	Description	Test Result 1	Test Result 2	Requirement as per MORTH (Table 500-19)
1	Marshal Stability, Kn	9.39	10.04	9 Kn (min)
2	Marshal flow, mm	3.68	3.58	2 – 4
3	Percent air voids in Mineral Aggregate	13.79	14.35	13 – 15
4	Voids in Compacted Mix	3.84	4.26	3 – 6
5	Percent Voids filled with Bitumen	68.91	69.57	65 - 75
6	Density, g/cc	2.25	2.27	--

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Job No.: CACE/BBMP/NK/W.No.14/2022-23 Date: 21.01.2023

TEST REPORT ON STABILITY OF MIX

Client	:	**Assistant Executive Engineer,** Dasarahalli Sub Division, BBMP, Bangalore.
Agency	:	**Sri. Nagaraj K, Contractor, Bangalore.**
Name of the Work	:	Modified Estimate of De-silting and Re-setting of drain and Re asphalting to 5th B cross and 17th cross and other cross roads at MEI Layout in ward no 14 Bagalagunte , BBMP, Bangalore.
Type of Mix	:	Dense Graded Bituminous Macadam
Date of Testing	:	21.01.2023

The results of the tests conducted on the Dense Graded Bituminous Macadam mix sample are as follows:

Sl. No	Description	Test Result 1	Test Result 2	Requirement as per MORTH (Table 500-19)
1	Marshal Stability, Kn	9.52	10.21	9 Kn (min)
2	Marshal flow, mm	3.86	3.95	2 – 4
3	Percent air voids in Mineral Aggregate	13.97	14.53	13 – 15
4	Voids in Compacted Mix	3.48	4.62	3 – 6
5	Percent Voids filled with Bitumen	68.19	69.75	65 - 75
6	Density, g/cc	2.25	2.24	--

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